

## Four Areas of Disciplinary and Substantive Knowledge which Underpin the Arrow Valley First School Computing Curriculum



Our assessment framework is structured to set out progression in four elements of the computing curriculum. This framework is designed to inform how we plan for children to progress year by year and assess how well they are improving. This should be used alongside the co-design documentation references to specific software, programmes and resources which support the curriculum and the development and the use of key vocabulary. Progression is a cumulative experience of using and applying disciplinary and procedural knowledge gained (“knowledge”) and made secure by repeated practice in different contexts. Learning is embedded by the application of what has previously been learned and remembered into new contexts.

### Programming

At Arrow Valley, we provide opportunities for pupils to understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms, and data representation. The pupils learn to programme devices and software to achieve specific effects. As pupils become more experienced, their programming is applied to more complex tasks and across a greater range of software. As pupils develop their knowledge of algorithms and how they work within software, pupils begin to analyse problems and errors in computational terms and have repeated practical experience of de-bugging, editing and correcting computer programs to solve identified problems, refine and modify outcomes, and identify ways of making programmes more efficient.

### Sharing information

Starting in EYFS pupils are provided with opportunities to gain experience in how to use and apply information technology across a range of contexts and for a range of purposes. As the pupils become more experienced, they learn to edit and evaluate their work reflecting both purpose and audience.

### Technology in our lives

Pupils learn to evaluate and apply information technology, including new or unfamiliar technologies. As pupils use of the internet becomes more sophisticated, multi-dimensional and individual, they learn how to evaluate the accuracy and the trustworthiness of information.

### E-Safety

Throughout the primary years, pupils learn to use technology safely and respectfully. Their understanding of e-safety issues is developed through regular responsible use of software applications and the internet. As pupils experience develops, they learn to follow appropriate rules about safe use of the internet, software, and social media, what constitutes acceptable and unacceptable behaviour and how to report issues and any concerns they have. This is explicitly modelled by teachers in class.

## Programming

Y1	Y2	Y3	Y4
<p>Create a simple algorithm.</p> <p>Use a simple algorithm to perform a task and evaluate how effective the algorithm is.</p>	<p>Create an algorithm appropriate to a planned task.</p> <p>Refine (de-bug) an algorithm for effectiveness.</p> <p>Identify what makes an algorithm efficient.</p>	<p>Use a block language to create a program to achieve a specific outcome.</p> <p>Refine and review a pre-written algorithm.</p>	<p>Use a block language to create a program to achieve a specific outcome.</p> <p>Use logical reasoning to detect and fix errors in programmes.</p>

## Sharing information

Y1	Y2	Y3	Y4
<p>Create, edit, store, and retrieve information using a range of technologies.</p>	<p>Create, edit, store, and retrieve information for a given purpose, paying attention to the intended audience.</p>	<p>Plan how to input information into a given application.</p> <p>Evaluate the result against the desired outcome.</p>	<p>Plan how to input information appropriately and effectively into a given application.</p> <p>Evaluate the result against the desired outcome, giving and acting on feedback.</p>

## Technology in our lives

Y1	Y2	Y3	Y4
Identify ways in which technology benefits people's lives, their own and others.	Identify how and why different people use technology to communicate information.	Know that the internet is a giant network of information.  Identify how the school's network operates within the internet.	Know that information on the internet is owned.

## E-Safety

Y1	Y2	Y3	Y4
Know that they and adults have responsibility for keeping themselves safe online.  Know why technology is monitored and filtered for safety.	Know what constitutes personal information.  Show knowledge of how to keep personal information safe, both online and in the real world.	Know what constitutes acceptable and unacceptable (including naïve) behaviours when using technology.  Know how and to whom to report unacceptable behaviour.	Know and show understanding of the rules of online behaviour.  Know and show understanding of the consequences of online behaviour.

## How learning in the Early Years Foundation Stage provides the range of experiences and a secure knowledge base on which the KS1 curriculum in computing builds.

Planning for the curriculum and children's learning in the Early Years Foundation Stage uses the elements of the EYFS statutory framework rather than the subject disciplines of the National Curriculum. This planning is supported using the non-statutory Development Matters guidance.

Children's experiences and learning involving computer technology in Early Years are reflected in all the areas of learning - Communication and Language, Personal Social and Emotional Development, Physical Development, Literacy, Mathematics, Understanding the World and Expressive Arts and Design. The foundations for the development of the KS1 computing curriculum are found in children's use of a range of technologies for authentic purposes, especially how to make devices function in different ways and how to access and manipulate images and digital media in response to their ideas and interests.

The EYFS curriculum starts with the child's experience in their family and in their immediate environment. It is highly likely that children start in our settings having had early experiences using technology. Pupils are likely to have devices of their own and/or have regular access to the internet. It is also highly likely that our youngest pupils consume more information than they are creating. Therefore, in our setting we use technology in purposeful ways across all the areas of learning so that children can create rather than consume. This will balance the scale or even tip it in favour of creating with technology in the same way children create with other resources in our enabling Early Years environment. We need to teach them how to create with technology in the way same we teach them to create with other tools.

As well as developing their skills in creating using technology, the experiences children gain from the EYFS curriculum are rich in opportunities to solve real problems, to make choices to support their ideas and to articulate their thinking within their play and within structured activities. The way in which the curriculum is designed and experienced by the children supports the development of the characteristics of effective learning in EYFS: playing and exploring, active learning and creating and thinking critically. In particular, the foundations of thinking logically and identifying cause and effect lie at the centre of the subject discipline of computing.

**By the end of Y1.**

Programming	Sharing information	Technology in our lives	E-Safety
<p>Create a simple algorithm.</p> <p>Use a simple algorithm to perform a task and evaluate how effective the algorithm is.</p>	<p>Create, edit, store and retrieve information using a range of technologies</p>	<p>Identify ways in which technology benefits people's lives, their own and others'.</p>	<p>Know that they and adults have responsibility for keeping themselves safe online. (PSHE - Keeping safe and managing risks)</p> <p>Know why technology is monitored and filtered for safety. (PSHE - Keeping safe and managing risks)</p>

**By the end of Y2.**

Programming	Sharing information	Technology in our lives	E-Safety
<p>Create an algorithm appropriate to a planned task.</p> <p>Refine (de-bug) an algorithm for effectiveness.</p> <p>Identify what makes an algorithm efficient.</p>	<p>Create, edit, store and retrieve information for a given purpose, paying attention to the intended audience.</p>	<p>Identify how and why different people use technology to communicate information.</p>	<p>Know what constitutes personal information. (PSHE - Keeping safe and managing risks)</p> <p>Show knowledge of how to keep personal information safe, both online and in the real world. (PSHE - Keeping safe and managing risks)</p>

**By the end of Y3.**

Programming	Sharing information	Technology in our lives	E-Safety
<p>Use a block language to create a program to achieve a specific outcome.</p> <p>Refine and review a pre-written algorithm.</p>	<p>Plan how to input information into a given application.</p> <p>Evaluate the result against the desired outcome.</p>	<p>Know that the internet is a giant network of information.</p> <p>Identify how the school's network operates within the internet.</p>	<p>Know what constitutes acceptable and unacceptable (including naïve) behaviours when using technology. (PSHE - Keeping safe and managing risks)</p> <p>Know how and to whom to report unacceptable behaviour. (PSHE - Keeping safe and managing risks)</p>

**By the end of Y4.**

Programming	Sharing information	Technology in our lives	E-Safety
<p>Use a block language to create a program to achieve a specific outcome.</p> <p>Use logical reasoning to detect and fix errors in programmes.</p>	<p>Plan how to input information appropriately and effectively into a given application.</p> <p>Evaluate the result against the desired outcome, giving and acting on feedback.</p>	<p>Know that information on the internet is owned.</p>	<p>Know and show understanding of the rules of online behaviour. (PSHE - Keeping safe and managing risks)</p> <p>Know and show understanding of the consequences of online behaviour. (PSHE - Keeping safe and managing risks)</p>